Agenda, Discussion Topics, and Meeting Notes

Drought Early Warning Information System for Southern California

National Integrated Drought Information System (NIDIS) Pilot Activity

Tuesday, September 4, 2012
Spiess Hall Room 330
Scripps Institution of Oceanography, San Diego, CA
8:00 a.m. - 4:00 p.m.

Experimental Drought Monitor

AGENDA

8:00 a.m.	Continental breakfast
8:40 a.m.	Welcome, introductions, meeting goals
8:50 a.m.	Drought monitoring product - information use and needs
10:00 a.m.	Break
10:20 a.m.	Drought monitoring product - continued
11:30 p.m.	Lunch (brought in)
12:30 p.m.	Developing a product for Southern California / California
2:00 p.m.	Break
2:20 p.m.	Developing a product - continued
3:30 p.m.	Next steps, action items
4:00 p.m.	Adjourn

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DISCUSSION TOPICS

1. Drought monitoring product - information use and needs

- What do you currently use for monitoring and characterizing drought?
- Is this information useful? Why or why not?
- What types of monitoring information would you like to have, but don't currently have?
- What information would be important to include in a product to characterize drought conditions and address drought issues in Southern California / California?

- A goal of NIDIS is to provide "*an effective drought early warning system that... collects and integrates information on the key indicators of drought in order to make usable, reliable, and timely drought forecasts and assessments of drought, ...*"

- What does "drought early warning" mean to you?
- What would a drought early warning system need to include, for your purposes?
- What about "drought forecasts and assessments of drought" - what is needed?

2. Developing a product for Southern California / California

- What specifically should be included?
- Who would contribute to this?
- Who would use this?
- What existing information could be used or adapted?
- What new information would need to be developed?
- What would be a useful format?
- Who would maintain this?
- Where would it be hosted or institutionalized?
- How would it be evaluated?
- How would it be sustained, beyond the life of this NIDIS Pilot Activity?
- What needs to be done next?

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DISCUSSION TOPICS

From previous meetings: ideas for a SoCal/CA drought monitoring product

Product could be customized by user, and integrate local/specific indicators and information (both public and non-public) with external water supply data, standard indicators, and other information.

Indicator attributes (possible considerations):

- consistent and comparable terms (e.g., all in terms of percentiles)
- individual/separate (rather than pre-aggregated)
- possible to combine (with user-defined weights)
- possible to customize (type, format, and scale of information)
- all in one place - "one stop shopping"
- possible for user to specify climatology
- analogs - relative to historic drought conditions

Indicator types (possible considerations):

- Hydrologic indicators
  - e.g., precipitation, soil moisture, groundwater, streamflow, runoff, snow water equivalent, reservoir levels, ...
- Climate-related indicators
  - e.g., forecast information, ENSO, PDO
- Water supply (external / managed system) indicators
  - Colorado River
  - MWD deliveries
- Water demand indicators
  - temperature / ET - related to outdoor water use
  - water use restrictions
- Regulatory factors
  - e.g., ESA
- Local / specific indicators
  - groundwater levels
  - water deliveries

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MEETING NOTES

The theme of this meeting was on exploring and creating an "experimental drought monitor" (EDM), with a focus on information that would be useful for drought assessment, forecasting, and decision-making. A further objective was to develop a platform that would offer "one-stop-shopping": a consolidated (all in one place) source of individual drought indicators/information that would be used and customized as inputs to drought decisions and communications.

Participants indicated that NIDIS could provide a valuable resource by creating a "smorgasbord" of early warning information that would be useful to and customized by decision-makers. Decision-makers would then create their particular "sandwich," use and customize the information, synthesize it, involving both subjective and objective metrics. This approach (where NIDIS would provide the information and the user would interpret and synthesize it) recognizes that the individual agency/decision-maker is the one who understands their local drought factors best, and that NIDIS would not be in a position to interpret, weigh, and combine the information into some singular drought assessment (like the Drought Monitor does). Further, individual agencies would be the ones to handle their own messaging, relying on products that NIDIS could provide, rather than NIDIS being the venue for bringing together and interpreting the various messages from agencies.

We then explored the question of whether NIDIS should play a role in bringing together (e.g., displaying on a regional map) the individual agencies' characterizations of drought conditions. As one approach, the drought information (from the EDM) would be interpreted and synthesized by the decision-maker, and then converted into an assessment of drought conditions (such as the "gauge" used by Metropolitan Water District) that could be used for messaging to the public. Each agency would produce a single summary gauge – red, yellow, blue - with arrow pointing left, up, or right (to signify drought getting worse, staying the same, or recovering). In addition to the single summary gauge, each agency could provide individual gauges for the primary factors that contributed to the drought assessment (e.g., reservoir levels), with a short narrative describing the reasons for the assessment. However, after significant discussion, it was decided that agencies would not necessarily find this useful. For one, the summary representation would need to be consistent with the agency's own summary (to avoid conflicting messages), yet the metric (e.g., a gauge) would need to be consistent across agencies (so they could all be represented on a regional map). For another, it could prove politically

infeasible for an agency to get internal approval to release a summary assessment of drought conditions, or to say that some element of water supply conditions were not adequate. Further, a strong incentive would need to be provided to agencies to participate in such a venue (given other demands on time and resources).

This topic was revisited the next day, and participants agreed that NIDIS could, instead, provide a useful function by providing the information in the "smorgasbord" (as previously discussed), which the agencies could use for their own assessments and messaging, such as for explaining the scientific bases for their drought assessments, forecasts, and decisions (i.e., something they could point to and say, see, this is why we're still in a drought). Thus, this experimental drought monitor would be a platform/dashboard/"drought viewer"-with the range of indicators and information that could be customized by the user. Participants expressed enthusiasm for such a product, and ways that it could be useful to them (e.g., one-stop shopping for indicators and other information, comparable and understandable formats, trusted and authoritative source, used for messaging). The details are as follows.

Drought Indicator Information:

hydrologic, meteorologic, physical information:
precipitation
temperature
snowpack
soil moisture
runoff
streamflow
groundwater levels
reservoir levels
evapotranspiration
reservoir evaporation
vegetative status

climate:
ENSO
PDO / NPO
AO
MJO

related to impacts:
(e.g., extent of fallowed land)

additional sources of supplies:
recycled water
desalination supplies
AWT (advanced wastewater treatment)

allocations:
State Water Project allocation

Colorado River allocation

demand:
water rate information

regulatory:
ESA (included in water allocations)

water quality:
conductivity, sodium, chloride, bromine (for urban drinking water), TOC, TDS (MWD blend)

unmanaged supplies:
remote sensing data, vegetative, fire risk assessment
small water systems

other:
fire data
satellite data
ISI predictions
analog year's dataset (and particular years)

links:
CIMIS page
economic/demographic information
California DWR drought page

Ways in which the information could be customized:

Temporal scale – (e.g., monthly, seasonal)
also include specific water years/calendar year/ precipitation year
also specify temporal scale for anomaly

Spatial scale – (also include areas external to agency / Southern California)

Data type – e.g., raw values, percentiles, standardized anomalies
comparable basis
understandable to public

Climatology

Presentation – e.g., map, graphic, databases, Google earth

Comparison to different years, or sets of years

Baseline or other levels
(e.g., for major reservoirs, flood control, red zone)